

SEQUENCE LISTING

<110> Shorrosh, Basil S.
DeBonte, Lorin R.

<120> PLANTS CONTAINING A CYTOSOLIC ACETYL
COA-CARBOXYLASE

<130> 07148-094001

<150> US 60/198,794

<151> 2000-04-20

<160> 12

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<212> DNA

<213> Artificial Sequence

<220>

<223> primer for PCR

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<213> Nicotiana tabacum

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Val Ala Gln Ala Asn Met Val Ala Pro Phe Thr Gly Leu Lys Ser Ala
20 25 30

T00240 46660

gcc tca ttc cct gtt tca agg aag caa aac ctt gac atc act tcc att 144
Ala Ser Phe Pro Val Ser Arg Lys Gln Asn Leu Asp Ile Thr Ser Ile
35 40 45

gcc agc aac ggc gga aga gtg caa tgc atg cag gtg tgg cca cca att 192
Ala Ser Asn Gly Gly Arg Val Gln Cys Met Gln Val Trp Pro Pro Ile
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20 25 30
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35 40 45
Ala Ser Asn Gly Gly Arg Val Gln Cys Met Gln Val Trp Pro Pro Ile
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Asn Lys Lys Ser
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<212> DNA
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<223> representative construct (5' end)

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<212> DNA
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<220>
<223> representative construct (5' end)

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<212> DNA

<213> *Medicago sativa*

<220>

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<222> (1)...(6771)

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agt agg cac cct gct act aca acc gaa gta gat gaa tac tgc aat gcc	96
Ser Arg His Pro Ala Thr Thr Thr Glu Val Asp Glu Tyr Cys Asn Ala	
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ctt gga gga aac aag ccg att cat agc ata ttg att gca aac aat gga	144
Leu Gly Gly Asn Lys Pro Ile His Ser Ile Leu Ile Ala Asn Asn Gly	
35 40 45	
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Met Ala Ala Val Lys Phe Ile Arg Ser Val Arg Ser Trp Ala Tyr Glu	
50 55 60	
aca ttt ggc acg gaa aaa gct atc ttg ttg gtt gcc atg gca act cca	240
Thr Phe Gly Thr Glu Lys Ala Ile Leu Leu Val Ala Met Ala Thr Pro	
65 70 75 80	
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Glu Asp Met Arg Ile Asn Ala Glu His Ile Arg Ile Ala Asp Gln Phe	
85 90 95	
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Val Glu Val Pro Gly Gly Thr Asn Asn Asn Asn Tyr Ala Asn Val Gln	
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Leu Ile Leu Glu Ile Ala Glu Ile Thr His Val Asp Ala Val Trp Pro	
115 120 125	
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Gly Trp Gly His Ala Ser Glu Asn Pro Glu Leu Pro Asp Ala Leu Lys	
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Ala Lys Gly Ile Val Phe Leu Gly Pro Pro Ala Ile Ser Met Ala Ala	
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Leu Gly Asp Lys Ile Gly Ser Ser Leu Ile Ala Gln Ala Ala Glu Val	
165 170 175	
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Pro Thr Leu Pro Trp Ser Gly Ser His Val Lys Ile Pro Pro Glu Ser	
180 185 190	
gac ttg att act att cct gat gaa att tac cgt gca gca tgt gtt tat	624

F00240"2455550

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His	Asn	Asp	Asp	Glu	Val	Arg	Ala	Leu	Phe	Lys	Gln	Val	Gln	Gly	Glu		
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Val	Pro	Gly	Ser	Pro	Ile	Phe	Ile	Met	Lys	Val	Ala	Ser	Gln	Ser	Arg		
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Leu	His	Ser	Arg	Asp	Cys	Ser	Val	Gln	Arg	Arg	His	Gln	Lys	Ile	Ile		
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gct	acc	gtt	gag	tat	ctt	tat	agc	atg	gaa	act	ggc	gag	tac	tac	ttt	1056	
Ala	Thr	Val	Glu	Tyr	Leu	Tyr	Ser	Met	Glu	Thr	Gly	Glu	Tyr	Tyr	Phe		
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Leu	Glu	Leu	Asn	Pro	Arg	Leu	Gln	Val	Glu	His	Pro	Val	Thr	Glu	Trp		
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ata	gct	gag	ata	aat	ctg	cca	gca	gca	caa	gtt	gca	gtt	ggg	atg	ggc	1152	
Ile	Ala	Glu	Ile	Asn	Leu	Pro	Ala	Ala	Gln	Val	Ala	Val	Gly	Met	Gly		
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Ile	Pro	Leu	Trp	Gln	Ile	Pro	Glu	Ile	Arg	Arg	Phe	Tyr	Gly	Met	Glu		
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His	Gly	Gly	Gly	Asn	Asp	Gly	Trp	Lys	Lys	Thr	Ser	Val	Leu	Ala	Thr		
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cct	ttt	gat	ttt	gac	gaa	gca	caa	tct	aca	aag	ccg	aaa	ggg	cat	tgt	1296	
Pro	Phe	Asp	Phe	Asp	Glu	Ala	Gln	Ser	Thr	Lys	Pro	Lys	Gly	His	Cys		

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tgg gct tat ttc tct gtt aag tcc gga gga gga att cat gaa ttc tca Trp Ala Tyr Phe Ser Val Lys Ser Gly Gly Gly Ile His Glu Phe Ser 465 470 475 480			1440
gat tct caa ttt gga cat gtt ttt gcg ttt gga gaa tct aga gct tta Asp Ser Gln Phe Gly His Val Phe Ala Phe Gly Glu Ser Arg Ala Leu 485 490 495			1488
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gaa att cgt acc aac gtt gat tac aca att gat ctt ctg aat gct tca Glu Ile Arg Thr Asn Val Asp Tyr Thr Ile Asp Leu Leu Asn Ala Ser 515 520 525			1584
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tct ctt gtc cat tct caa gtt tct ttg agc att gaa gga agc aaa tac Ser Leu Val His Ser Gln Val Ser Leu Ser Ile Glu Gly Ser Lys Tyr 595 600 605			1824
acg att gac atg gta cga gga gga cct gga agt tac aaa ttg aaa ttg Thr Ile Asp Met Val Arg Gly Gly Pro Gly Ser Tyr Lys Leu Lys Leu 610 615 620			1872
aat caa tcg gag ata gaa gcg gag ata cac act tta cgt gat gga ggt Asn Gln Ser Glu Ile Glu Ala Glu Ile His Thr Leu Arg Asp Gly Gly 625 630 635 640			1920
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T00240" 4246E860

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cca tat gct gaa gtt gag gtc atg aag atg tgc atg cct ctt ctt tcc Pro Tyr Ala Glu Val Glu Val Met Lys Met Cys Met Pro Leu Leu Ser 705 710 715 720	2160
cct gct tct gga att att cat ttc aga atg gct gaa ggt caa gcc atg Pro Ala Ser Gly Ile Ile His Phe Arg Met Ala Glu Gly Gln Ala Met 725 730 735	2208
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gag	tat	ctt	tca	gtt	gaa	gaa	cta	ttc	agt	gat	aat	ata	cag	gct	gat	2784
Glu	Tyr	Leu	Ser	Val	Glu	Glu	Leu	Phe	Ser	Asp	Asn	Ile	Gln	Ala	Asp	
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gta	att	gaa	cga	ctc	cgt	ctt	caa	tac	aag	aaa	gat	ttg	ttg	aag	att	2832
Val	Ile	Glu	Arg	Leu	Arg	Leu	Gln	Tyr	Lys	Lys	Asp	Leu	Leu	Lys	Ile	
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Val	Asp	Ile	Val	Leu	Ser	His	Gln	Gly	Val	Lys	Ser	Lys	Asn	Lys	Leu	
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Ile	Leu	Arg	Leu	Met	Asp	Lys	Leu	Val	Tyr	Pro	Asn	Pro	Ala	Ala	Tyr	
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Arg	Asp	Gln	Leu	Ile	Arg	Phe	Ser	Gln	Leu	Asn	His	Ile	Val	Tyr	Ser	
			980						985			990				
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Glu	Leu	Ala	Leu	Lys	Ala	Ser	Gln	Leu	Leu	Glu	Gln	Thr	Lys	Leu	Ser	
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gaa	ctt	cga	tcc	agc	att	gct	aga	agt	ctt	tct	gaa	cta	gaa	atg	ttt	3072
Glu	Leu	Arg	Ser	Ser	Ile	Ala	Arg	Ser	Leu	Ser	Glu	Leu	Glu	Met	Phe	
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Thr	Glu	Asp	Gly	Glu	Asn	Ile	Asp	Thr	Pro	Lys	Arg	Lys	Ser	Ala	Ile	
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Asn	Asp	Arg	Met	Glu	Asp	Leu	Val	Ser	Ala	Pro	Leu	Ala	Val	Glu	Asp	
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Ala	Leu	Val	Gly	Leu	Phe	Asp	His	Ser	Asp	His	Thr	Leu	Gln	Arg	Arg	
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Val	Val	Glu	Thr	Tyr	Ile	Arg	Arg	Leu	Tyr	Gln	Pro	Tyr	Leu	Val	Lys	
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Thr	Leu	Val	Glu	Lys	His	Ser	Glu	Lys	Lys	Trp	Gly	Val	Met	Val	Val	
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Ile	Lys	Ser	Leu	Gln	Phe	Leu	Pro	Ala	Ile	Ile	Ser	Ala	Ala	Leu	Arg	
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Glu	Ala	Thr	Asn	Asn	Phe	His	Asp	Pro	Leu	Lys	Ser	Gly	Ser	Gly	Asp	
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Arg	Asp	Glu	Gly	Arg	Ala	Pro	Met	Arg	His	Ser	Phe	His	Trp	Ser	Ser	
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Glu	Lys	Leu	Tyr	Tyr	Val	Glu	Glu	Pro	Leu	Leu	Leu	His	Leu	Glu	Pro	
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Pro	Leu	Ser	Ile	Tyr	Leu	Glu	Leu	Asp	Lys	Leu	Lys	Cys	Tyr	Glu	Asn	
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Ile	Arg	Tyr	Thr	Pro	Ser	Arg	Asp	Arg	Gln	Trp	His	Leu	Tyr	Thr	Val	
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gtg	gat	acc	aag	cca	caa	cca	att	caa	aga	atg	ttt	ctt	cga	aca	ctt	3936
Val	Asp	Thr	Lys	Pro	Gln	Pro	Ile	Gln	Arg	Met	Phe	Leu	Arg	Thr	Leu	
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Ile	Arg	Gln	Pro	Thr	Thr	Asn										

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Ser His Asn Thr Thr Ile Lys Ser Glu His Ala His Met Tyr Leu Tyr			
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atc ata cgc gag cag caa ata gat gat ctt gtg cct tat tcc aag aaa			4176
Ile Ile Arg Glu Gln Gln Ile Asp Asp Leu Val Pro Tyr Ser Lys Lys			
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Ile Asn Ile Glu Ala Gly Gln Glu Glu Thr Thr Val Glu Ala Ile Leu			
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gaa gaa ctg gca cag gaa atc cat tcc tct gtt ggt gta aga atg cac			4272
Glu Glu Leu Ala Gln Glu Ile His Ser Ser Val Gly Val Arg Met His			
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aga tta ggc gtt ttc gtg tgg gaa atc aag ctc tgg att aca gca tgt			4320
Arg Leu Gly Val Phe Val Trp Glu Ile Lys Leu Trp Ile Thr Ala Cys			
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gga cag gca aat ggt gct tgg agg gtc att gta aac aat gtg act ggt			4368
Gly Gln Ala Asn Gly Ala Trp Arg Val Ile Val Asn Asn Val Thr Gly			
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cat aca tgc act gta cat ata tat cga gag atg gag gat gcc acc act			4416
His Thr Cys Thr Val His Ile Tyr Arg Glu Met Glu Asp Ala Thr Thr			
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cat aaa gtg gtc tac agt tca gtc act gta aag ggt ccg ttg cat ggt			4464
His Lys Val Val Tyr Ser Ser Val Thr Val Lys Gly Pro Leu His Gly			
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gta ccg gtg aat gaa aac tat caa cct ttg gga ggt att gac cga aaa			4512
Val Pro Val Asn Glu Asn Tyr Gln Pro Leu Gly Gly Ile Asp Arg Lys			
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cgt ctt gca gcg aga aag aac agc acc aca tac tgc tat gat ttc ccc			4560
Arg Leu Ala Ala Arg Lys Asn Ser Thr Thr Tyr Cys Tyr Asp Phe Pro			
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ctt gca ttt caa aca tcc ttg gaa cag tcc tgg tca ata cag cag aca			4608
Leu Ala Phe Gln Thr Ser Leu Glu Gln Ser Trp Ser Ile Gln Gln Thr			
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gga att caa aga gct aat gat aag gat ctc cta aaa gta aca gag ctt			4656
Gly Ile Gln Arg Ala Asn Asp Lys Asp Leu Leu Lys Val Thr Glu Leu			
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aaa ttt tcc gaa aaa gct ggt agt tgg ggt act tct ctt gtt cct gca			4704
Lys Phe Ser Glu Lys Ala Gly Ser Trp Gly Thr Ser Leu Val Pro Ala			
1555	1560		1565

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Glu Arg Leu Pro Gly Leu Asn Asp Val Gly Met Val Ala Trp Leu Met	
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Glu Met Cys Thr Pro Lys Phe Pro Ser Gly Arg Thr Ile Leu Val Val	
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Ser Asn Asp Val Thr Phe Lys Ala Gly Ser Phe Gly Pro Arg Glu Asp	
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Ala Phe Phe Arg Ala Val Thr Asp Leu Ala Cys Ala Lys Lys Ile Pro	
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Leu Ile Tyr Leu Ala Ala Asn Ser Gly Ala Arg Leu Gly Val Ala Glu	
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Glu Val Lys Ala Cys Phe Lys Val Gly Trp Ser Glu Glu Ser Lys Pro	
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Glu His Gly Phe Gln Tyr Val Tyr Leu Thr Pro Glu Asp Tyr Ala Arg	
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Ile Gly Ser Ser Val Met Ala His Glu Leu Lys Leu Glu Ser Gly Glu	
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Thr Arg Trp Val Ile Asp Thr Ile Val Gly Lys Glu Asp Gly Leu Gly	
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Leu Gly Arg Glu Val Tyr Ser Ser His Met Gln Leu Gly Gly Pro Lys	
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Ile Met Ala Thr Asn Gly Val Val His Leu Thr Val Ser Asp Asp Leu	
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Glu Gly Val Ser Ser Ile Leu Lys Trp Leu Ser Tyr Val Pro Ser His	
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Val Gly Gly Ala Leu Pro Ile Val Lys Pro Leu Asp Pro Pro Glu Arg	
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Glu Val Glu Tyr Leu Pro Glu Asn Ser Cys Asp Pro Arg Ala Ala Ile	
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Ser Gly Thr Leu Asp Val Asn Gly Lys Trp Leu Gly Gly Ile Phe Asp	
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Lys Asp Ser Phe Val Glu Thr Leu Glu Gly Trp Ala Arg Thr Val Val	
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Thr Gly Arg Ala Lys Leu Gly Gly Ile Pro Val Gly Ile Val Ala Val	
1890 1895 1900	
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Glu Thr Gln Thr Val Met Gln Ile Ile Pro Ala Asp Pro Gly Gln Leu	
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Asp Ser His Glu Arg Val Val Pro Gln Ala Gly Gln Val Trp Phe Pro	
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Asp Ser Ala Thr Lys Thr Ala Gln Ala Ile Leu Asp Phe Asn Arg Glu	
1940 1945 1950	
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Glu Leu Pro Leu Phe Ile Ile Ala Asn Trp Arg Gly Phe Ser Gly Gly	
1955 1960 1965	
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Gln Arg Asp Leu Phe Glu Gly Ile Leu Gln Ala Gly Ser Thr Ile Val	
1970 1975 1980	
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Glu Asn Leu Arg Thr Tyr Lys Gln Pro Ile Phe Val Tyr Ile Pro Met	
1985 1990 1995 2000	
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Met Gly Glu Leu Arg Gly Gly Ala Trp Val Val Val Asp Ser Arg Ile	
2005 2010 2015	
aac tca gac cac att gaa atg tat gct gag cga acg gcc aaa ggt aac	6096

Asn Ser Asp His Ile Glu Met Tyr Ala Glu Arg Thr Ala Lys Gly Asn	
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Val Leu Glu Pro Glu Gly Met Ile Glu Ile Lys Phe Arg Thr Arg Glu	
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Leu Leu Glu Cys Met Arg Arg Leu Asp Gln Gln Leu Ile Asn Leu Lys	
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Glu Lys Leu Ser Glu Ala Lys Ser Asn Lys Asp Tyr Gly Ala Tyr Asp	
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Ser Leu Gln Gln Gln Ile Arg Phe Arg Glu Lys Gln Leu Leu Pro Leu	
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tat act cag ata gct aca aaa ttt gct gaa ctc cat gat act tca tta	6336
Tyr Thr Gln Ile Ala Thr Lys Phe Ala Glu Leu His Asp Thr Ser Leu	
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Arg Met Lys Ala Lys Gly Val Ile Arg Glu Val Leu Asp Trp Arg Lys	
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Ser Arg Ser Val Phe Tyr Gln Arg Leu His Arg Arg Ile Gly Glu His	
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Ser Leu Ile Asn Ile Val Arg Asp Ala Ala Gly Asp Gln Leu Ser Tyr	
2145 2150 2155 2160	
gtt tct gcc atg aac ttg ctc aaa gaa tgg tat ctg aat tct gat atc	6528
Val Ser Ala Met Asn Leu Leu Lys Glu Trp Tyr Leu Asn Ser Asp Ile	
2165 2170 2175	
gcc aaa ggt aga gaa gat gct tgg ttg gac gat gaa gcc ttc ttc aga	6576
Ala Lys Gly Arg Glu Asp Ala Trp Leu Asp Asp Glu Ala Phe Phe Arg	
2180 2185 2190	
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Trp Arg Asp Asp Pro Ala Asn Tyr Glu Asp Lys Leu Lys Glu Leu Arg	
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Val Gln Arg Leu Leu Leu Gln Leu Thr Asn Ile Gly Asp Ser Ala Leu	
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Asp Leu Gln Ala Leu Pro Gln Gly Leu Ala Ala Leu Leu Ser Lys Leu	
2225 2230 2235 2240	
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Glu Ala Ser Ser Arg Asp Lys Leu Ile Ser Glu Leu Arg Lys Val Leu	

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2245

2250

2255

ggg tagtagacag tgaatgctcc tgtgatctgc ccatgcactc atgttgtagt
Gly

6821

gttcacgtcg ttgatacatg accatataga aatgtatcca ttttacgatg ttatcatcaa 6881
agtagcagca tccctcggaa aatggacttt cacttgaggg atcaactgta aatgacttcg 6941
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<210> 8

<211> 2257

<212> PRT

<213> Medicago sativa

<400> 8

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Ser	Arg	His	Pro	Ala	Thr	Thr	Thr	Glu	Val	Asp	Glu	Tyr	Cys	Asn	Ala
			20					25					30		
Leu	Gly	Gly	Asn	Lys	Pro	Ile	His	Ser	Ile	Leu	Ile	Ala	Asn	Asn	Gly
			35				40					45			
Met	Ala	Ala	Val	Lys	Phe	Ile	Arg	Ser	Val	Arg	Ser	Trp	Ala	Tyr	Glu
	50					55				60					
Thr	Phe	Gly	Thr	Glu	Lys	Ala	Ile	Leu	Leu	Val	Ala	Met	Ala	Thr	Pro
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Glu	Asp	Met	Arg	Ile	Asn	Ala	Glu	His	Ile	Arg	Ile	Ala	Asp	Gln	Phe
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Val	Glu	Val	Pro	Gly	Gly	Thr	Asn	Asn	Asn	Asn	Tyr	Ala	Asn	Val	Gln
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Leu	Ile	Leu	Glu	Ile	Ala	Glu	Ile	Thr	His	Val	Asp	Ala	Val	Trp	Pro
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Gly	Trp	Gly	His	Ala	Ser	Glu	Asn	Pro	Glu	Leu	Pro	Asp	Ala	Leu	Lys
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Ala	Lys	Gly	Ile	Val	Phe	Leu	Gly	Pro	Pro	Ala	Ile	Ser	Met	Ala	Ala
145					150					155					160
Leu	Gly	Asp	Lys	Ile	Gly	Ser	Ser	Leu	Ile	Ala	Gln	Ala	Ala	Glu	Val
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Pro	Thr	Leu	Pro	Trp	Ser	Gly	Ser	His	Val	Lys	Ile	Pro	Pro	Glu	Ser
		180					185					190			
Asp	Leu	Ile	Thr	Ile	Pro	Asp	Glu	Ile	Tyr	Arg	Ala	Ala	Cys	Val	Tyr
	195					200					205				
Thr	Thr	Glu	Glu	Ala	Ile	Ala	Ser	Cys	Gln	Val	Val	Gly	Tyr	Pro	Ala
	210					215					220				
Met	Ile	Lys	Ala	Ser	Trp	Gly	Gly	Gly	Gly	Lys	Gly	Ile	Arg	Lys	Val
225				230						235					240
His	Asn	Asp	Asp	Glu	Val	Arg	Ala	Leu	Phe	Lys	Gln	Val	Gln	Gly	Glu
			245					250						255	
Val	Pro	Gly	Ser	Pro	Ile	Phe	Ile	Met	Lys	Val	Ala	Ser	Gln	Ser	Arg
		260						265					270		
His	Leu	Glu	Val	Gln	Leu	Ile	Cys	Asp	Gln	His	Gly	Asn	Phe	Ala	Ala
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Leu	His	Ser	Arg	Asp	Cys	Ser	Val	Gln	Arg	Arg	His	Gln	Lys	Ile	Ile
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"04247" 04200

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Glu	Gln	Ala	Ala	Arg	Arg	Leu	Ala	Lys	Ser	Val	Asn	Tyr	Val	Gly	Ala
				325					330					335	
Ala	Thr	Val	Glu	Tyr	Leu	Tyr	Ser	Met	Glu	Thr	Gly	Glu	Tyr	Tyr	Phe
			340					345					350		
Leu	Glu	Leu	Asn	Pro	Arg	Leu	Gln	Val	Glu	His	Pro	Val	Thr	Glu	Trp
		355					360					365			
Ile	Ala	Glu	Ile	Asn	Leu	Pro	Ala	Ala	Gln	Val	Ala	Val	Gly	Met	Gly
	370					375					380				
Ile	Pro	Leu	Trp	Gln	Ile	Pro	Glu	Ile	Arg	Arg	Phe	Tyr	Gly	Met	Glu
385					390					395					400
His	Gly	Gly	Gly	Asn	Asp	Gly	Trp	Lys	Lys	Thr	Ser	Val	Leu	Ala	Thr
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Pro	Phe	Asp	Phe	Asp	Glu	Ala	Gln	Ser	Thr	Lys	Pro	Lys	Gly	His	Cys
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Val	Ala	Val	Arg	Val	Thr	Ser	Glu	Asp	Pro	Asp	Asp	Gly	Phe	Thr	Pro
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Thr	Gly	Gly	Lys	Val	Gln	Glu	Leu	Ser	Phe	Lys	Ser	Lys	Pro	Asn	Val
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Trp	Ala	Tyr	Phe	Ser	Val	Lys	Ser	Gly	Gly	Gly	Ile	His	Glu	Phe	Ser
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Asp	Ser	Gln	Phe	Gly	His	Val	Phe	Ala	Phe	Gly	Glu	Ser	Arg	Ala	Leu
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Ala	Ile	Ala	Asn	Met	Val	Leu	Gly	Leu	Lys	Glu	Ile	Gln	Ile	Arg	Gly
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Glu	Ile	Arg	Thr	Asn	Val	Asp	Tyr	Thr	Ile	Asp	Leu	Leu	Asn	Ala	Ser
		515					520					525			
Asp	Tyr	Arg	Asp	Asn	Lys	Ile	His	Thr	Gly	Trp	Leu	Asp	Ser	Arg	Ile
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Ala	Met	Arg	Val	Arg	Ala	Glu	Arg	Pro	Pro	Trp	Tyr	Leu	Ser	Val	Val
545					550					555					560
Gly	Gly	Ala	Leu	Tyr	Lys	Ala	Ser	Ala	Ser	Ser	Ala	Ala	Leu	Val	Ser
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Asp	Tyr	Val	Gly	Tyr	Leu	Glu	Lys	Gly	Gln	Ile	Pro	Pro	Lys	His	Ile
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Ser	Leu	Val	His	Ser	Gln	Val	Ser	Leu	Ser	Ile	Glu	Gly	Ser	Lys	Tyr
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Thr	Ile	Asp	Met	Val	Arg	Gly	Gly	Pro	Gly	Ser	Tyr	Lys	Leu	Lys	Leu
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Asn	Gln	Ser	Glu	Ile	Glu	Ala	Glu	Ile	His	Thr	Leu	Arg	Asp	Gly	Gly
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Leu	Leu	Met	Gln	Leu	Asp	Gly	Asn	Ser	His	Val	Ile	Tyr	Ala	Glu	Glu
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T00210" 4246860

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Pro Thr Ala Ile Ser Gly Lys Val His Gln Lys Cys Ala Ala Ser Leu		
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785	790	795
Val Val Val Lys Ser Leu Leu Asn Cys Leu Asp Ser Pro Glu Leu Pro		
805	810	815
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820	825	830
Lys Asp Leu Arg Asn Glu Leu Glu Ala Lys Tyr Lys Glu Phe Glu Ile		
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Ile Ser Ser Ser Gln Thr Ile Asp Phe Pro Ala Lys Leu Leu Lys Ala		
850	855	860
Ile Leu Glu Ala His Leu Ser Ser Cys Pro Glu Asn Glu Lys Gly Ala		
865	870	875
Leu Glu Arg Leu Val Glu Pro Leu Thr Ser Leu Val Lys Ser Tyr Glu		
885	890	895
Gly Gly Arg Glu Ser His Ala His Lys Ile Val Gln Ser Leu Phe Glu		
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Glu Tyr Leu Ser Val Glu Glu Leu Phe Ser Asp Asn Ile Gln Ala Asp		
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Val Ile Glu Arg Leu Arg Leu Gln Tyr Lys Lys Asp Leu Leu Lys Ile		
930	935	940
Val Asp Ile Val Leu Ser His Gln Gly Val Lys Ser Lys Asn Lys Leu		
945	950	955
Ile Leu Arg Leu Met Asp Lys Leu Val Tyr Pro Asn Pro Ala Ala Tyr		
965	970	975
Arg Asp Gln Leu Ile Arg Phe Ser Gln Leu Asn His Ile Val Tyr Ser		
980	985	990
Glu Leu Ala Leu Lys Ala Ser Gln Leu Leu Glu Gln Thr Lys Leu Ser		
995	1000	1005
Glu Leu Arg Ser Ser Ile Ala Arg Ser Leu Ser Glu Leu Glu Met Phe		
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Thr Glu Asp Gly Glu Asn Ile Asp Thr Pro Lys Arg Lys Ser Ala Ile		
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Asn Asp Arg Met Glu Asp Leu Val Ser Ala Pro Leu Ala Val Glu Asp		
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Ala Leu Val Gly Leu Phe Asp His Ser Asp His Thr Leu Gln Arg Arg		
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Val Val Glu Thr Tyr Ile Arg Arg Leu Tyr Gln Pro Tyr Leu Val Lys		
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Asp Ser Ile Arg Met Gln Trp His Arg Ser Gly Leu Ile Ala Thr Trp		
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Glu Phe Leu Glu Glu Tyr Val Glu Arg Lys Asn Gly Val Glu Asp Lys		
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Thr Leu Val Glu Lys His Ser Glu Lys Lys Trp Gly Val Met Val Val		
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Ile Lys Ser Leu Gln Phe Leu Pro Ala Ile Ile Ser Ala Ala Leu Arg		
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Glu Ala Thr Asn Asn Phe His Asp Pro Leu Lys Ser Gly Ser Gly Asp		
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Ser Ser Asn His Gly Asn Met Met His Ile Gly Leu Val Gly Ile Asn		
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Glu	Lys	Leu	Tyr	Tyr	Val	Glu	Glu	Pro	Leu	Leu	Leu	His	Leu	Glu	Pro
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Ile	Ile	Arg	Glu	Gln	Gln	Ile	Asp	Asp	Leu	Val	Pro	Tyr	Ser	Lys	Lys
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